

What is claimed is :

1. An abrasive liquid for CMP process comprising:
an abrasive material;
an aqueous solvent; and
5 an addition agent;
and containing abrasive particles having a particle diameter of 20
to 80 nm by 15 weight % or more on a basis of a weight of the abrasive
liquid.
2. The abrasive liquid for CMP process according to Claim 1, wherein
10 said addition agent is a basic substance having a pKa of 7 to 11 at a
temperature of 25 °C.
3. The abrasive liquid for CMP process according to Claim 1, wherein
said addition agent is fatty amine having a primary amino group and/or
ammonia.
- 15 4. The abrasive liquid for CMP process according to Claim 1, wherein
a content of said addition agent is 0.01 weight % or more on a basis of a
weight of the abrasive liquid.
5. The abrasive liquid for CMP process according to Claim 1, wherein
said abrasive material is an inorganic substance of one kind or two kinds or
20 more selected from a group consisting of silicon dioxide, aluminum oxide,
cerium oxide, silicon nitride, and zirconium oxide.
6. The abrasive liquid for CMP process according to Claim 1, wherein
said abrasive material is colloidal silica.
7. A method of polishing a device wafer by using an abrasive liquid for
25 CMP process comprising an abrasive material, an aqueous solvent and an

addition agent, and containing abrasive particles having a particle diameter of 20 to 80 nm by 15 weight % or more on a basis of a weight of the abrasive liquid.

8. The method of polishing according to Claim 7, wherein a surface of said device wafer to be polished is formed of a film comprising at least silicon oxide.

9. The method of polishing said device wafer, comprising the step of polishing by two stages or more with polishing conditions changed; wherein the method of polishing according to Claim 7 is used at any of the stages.

10. The method of polishing according to Claim 9, wherein the step of polishing in a second stage and further is performed under one or two conditions or more among the following conditions:

(1) to differentiate a quality of an abrasive material to be used between a first stage and a second stage and further;

(2) to use an abrasive liquid, such that an abrasive liquid at a first stage is diluted by 1.1 to 100 times, as an abrasive liquid in a second stage and further;

(3) to make into 0.1 to 10.0 a ratio $[(r1)/(r2)]$ of an average particle diameter (r1) of an abrasive material used at a first stage to an average particle diameter (r2) of an abrasive material used in a second stage and further;

(4) to make into 0.3 to 5.0 a ratio $[(p1)/(p2)]$ of a pressure (p1) applied on a semiconductor substrate in polishing at a first stage to a pressure (p2) applied on a semiconductor substrate in polishing in a second

stage and further; and

(5) to make into 0.2 to 2.0 a ratio $[(t1)/(t2)]$ of a rotational speed (t1) of a surface plate in polishing at a first stage to a rotational frequency (t2) of a surface plate in polishing in a second stage and further.

5 11. The method of polishing according to Claim 7, wherein an abrasive pad with concentric recessing or spiral recessing is used.

12. The method of polishing according to Claim 7, wherein pad conditioning is performed simultaneously with polishing for 10 % or more of polishing time.

10 13. The method of polishing according to Claim 7, wherein, in dropping an abrasive liquid for CMP process into an abrasive pad, polishing is performed while putting an abrasive head on a side of a rotational direction of an abrasive table with respect to a dropping position of the abrasive liquid and putting the dropping position of the abrasive liquid on a side of a
15 rotational direction of the abrasive table with respect to a pad conditioner and immediately near a center of the pad with respect to a center of the abrasive head.

14. A layer insulation film or an element separation film obtained by polishing with a use of an abrasive liquid for CMP process according to
20 Claim 1.

15. A semiconductor device comprising a layer insulation film or an element separation film according to Claim 14.

16. A magnetic head or a substrate for a liquid crystal display obtained by polishing with a use of an abrasive liquid for CMP process according to
25 Claim 1.